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AUTHOR Selfe, Cynthia L.; Wahlstrom, Billie J.  
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## ABSTRACT

A study was conducted to explore how microcomputers had affected the collaborative writing and communication habits of 11 teachers and 16 students at a midwestern technological university. Informal observations made after the computers were placed in faculty workspaces and later in a computer lab led to a more formal survey of teachers and students and to follow-up interviews. The results of the observations, surveys, and interviews indicated that increased use of computers for composing in the humanities department had intensified collaborative writing habits among the students and faculty in three ways: (1) by bringing faculty and students together in communal writing spaces, (2) by encouraging faculty to establish new patterns of sharing information about writing, and (3) by altering the social patterns that controlled the exchange of written copy. Teachers reported increasing their rate of communication with other writers when they composed on computers in the communal workspaces rather than with pen and paper in an isolated setting. Both teachers and students indicated that traditional boundaries existing between the two groups began to break down in the computer labs, although some respondents did not see this as a positive development. Because of the public nature of writing, students and faculty appeared to be developing an etiquette, specifically designed for communal writing spaces, that included rules about greeting other users, looking at someone else's screen copy, and locating oneself physically in relation to other writers composing on computers. (Tables of data are included.) (HTH)

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An Emerging Rhetoric of Collaboration:  
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Cynthia L. Selfe and Billie J. Wahlstrom  
Department of Humanities  
Michigan Technological University  
Houghton, Michigan 49931  
(906) 487-2447

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The composing process is in the midst of a serious upheaval occasioned by the impact of emerging technologies. As the electronic revolution gathers strength in the writing classroom, we see increasing numbers of articles written about the power of computers as word processors, text editors, and drafting tools. And yet, we have only begun to comprehend the complex relationships existing between the act of writing and the use of computers as part of the composing process.

Certainly, one of the more fruitful areas of study that composition specialists can explore to increase their understanding of this subject is communication theory. We have too seldom placed the electronic composing process in the larger context of human communication systems and have, consequently, done a less than thorough job of exploring how information technologies alter the social, psychological, and organizational dimensions of human interaction.

In this paper, we will discuss three intriguing findings from a preliminary investigation that looks at writing on computers within a social context. This study explores the ways in which microcomputers have affected the collaborative writing and communication habits of 26 subjects--11 teachers and 16 students--at Michigan Technological University. We have found that the increasing use of computers as composing tools in our department has intensified collaborative writing habits among computer users in three ways: first, by

bringing faculty and and students together in communal writing spaces: second, by encouraging us to establish new patterns of sharing information about writing; and third, by altering the social patterns that control our exchange of written copy.

Before we describe these changes, however, we should tell those of you who are not familiar with Michigan Tech how we value collaboration among writers and readers. At our University, isolated in the northwestern quadrant of the Upper Peninsula of Michigan, one hundred miles from the nearest stop light, five hundred miles north of any major city, collaboration is a way of life, a matter of necessity. We shovel snow together and start cars with shared jumper cables in frozen parking lots. We also write together in various language communities, thanks to the awareness we have gained through a seven-year-old writing-across-the-curriculum program. Students write in our classes and regularly critique each other's work. Our faculty frequently share their writing among themselves, often passing four or five drafts of a piece among of their patient colleagues. We have learned, as writing teachers and as writers in this environment, that it pays to establish human interaction early in the composing process, and that such interaction facilitates an important and valuable exchange of information between readers and writers.

Computers, it seems, have allowed us not only to carry on this tradition of collaborative writing efforts, but to intensify these efforts.

Perhaps the most important finding from our survey is also the simplest one: computers have brought us together physically. When we purchased our first computers, we placed the machines in the departmental workspaces so that faculty could use them for word processing. We noticed that these computers, located as they were in central office areas, began to act as magnets. If one faculty member was working on a piece of writing, others--passing through the office to collect their mail or bring work to the secretarial staff--would stop and watch. Small clusters of faculty members would often form around those first computers, and we observed that much of the talk involved the writing task at hand.

As the department added more computers and we were able to offer our students some word processing time, we put several machines in our Language Skills Lab. And we observed a similar phenomenon--the Lab became a gathering place for students who were writing or talking about writing--much as the departmental workspaces had for teachers. At any given time in that room, four or five students would be working on writing projects using the computers, and two or three more would be standing beside or behind them kibbitzing or collaborating on the project they were undertaking.

After several months, we found that faculty and students were exchanging places; teachers began writing alongside students on the computers in the Lab, and students began invading the secretarial spaces when faculty computers were not in use. We were developing a new way of collaborating with other writers as keyboards and multiple printers raced along in accompaniment. By the time we had collected

the dozen microcomputers the department now owns, we found we had created two full-fledged computerized writing centers without even trying.

In 1984, inspired by our observations of collaborative activities in these communal work spaces, we made a more organized attempt to survey a sample of faculty and students who regularly wrote on the departmental computers. The findings from our survey and the follow-up interviews we conducted supported many of the personal observations we had made of the collaborative activities occurring in these spaces. We found, for example, that 22% of our students and 27% of the teachers reported increasing their rate of communication with other writers when they composed on computers in our communal workspaces rather than using more traditional tools in isolated dorm-room or office settings.

We also found that the communication going on in our departmental computer areas was not strictly limited to the more common student-to-student or teacher-to-teacher patterns. Both teachers and students indicated that the traditional boundaries existing between the two groups began to break down when individuals came together to compose in a computer lab or workspace. As one teacher so aptly noted, "If I need help on the computer, I'll take it where I can get it...and students are one source of help."

What did teachers and students say to each other about their writing? Although teachers reported talking to students about the composing task itself--that is about matters of organization, content, grammar,

word choice, or revision--such topics were not always primary in their exchanges. They also mentioned asking students about the mechanics involved in getting text on the screen--methods of revising, formatting, and printing text--and other "computer problems" connected with writing on an electronic system.

Students agreed with teachers that computers broke down traditional social boundaries and encouraged communication about writing. Students reported, for example that teachers were "more accessible" when writing on the departmental computers than they were when writing in their own offices. As one student explained,

If someone is in the same room, writing on a computer, I feel they're more accessible than if I have to go find them. And I am fairly comfortable around instructors who are using computers.

We should mention that the dissolution of teacher/student boundaries, or indeed the increase of collaborative activity, was not always seen as a positive development by respondents. Two teachers in the survey group made specific references to the number of times they were "interrupted" by students when trying to compose on the computers. This year in our Lab, we have had to institute a signal system that allows users uninterrupted, private writing time. Now we provide red, "do-not-disturb" tags for people to hang around their necks when they prefer to write in solitude and green, "collaborate-with-me" tags for users to wear when they are willing to talk to others about writing projects.

In addition to bringing faculty and students together physically in communal writing spaces, computers have also encouraged us to establish new patterns of sharing information about writing. And this brings us to our second set of findings.

In one sense, we knew from the very beginning that our communal computer workspaces served much the same function as other semipublic spaces. All sorts of business was transacted there--dates were arranged, meeting times verified, jokes told, and information about classes exchanged. But we also sensed that important work on writing was going on. Students gathered around the computers, doing assorted tasks from layout to proofreading. They enjoyed the writing and working environment of the labs; faculty were drawn to these spaces not only because they could be more productive by using the computers to generate text, but because they were attracted by the energy emanating from an assembled mass of creative writers.

When we made a formal survey of the verbal exchanges occurring in the communal writing spaces, we did find that computers had changed the ways in which users shared information about writing and, to a certain extent, that computers actually dictated the kind of information users shared. As summarized by Table 1, we found that users' questions fell into four main categories: questions about writing projects they were doing or thinking of doing, questions about computer hardware and software, and questions about non-computer or non-writing subjects. When we asked respondents to identify more specifically the kinds of questions they

asked about two of these categories--questions about computers and questions about writing tasks--as Table 2 indicates, they reported at least as much interaction on the method tools of electronic text production (computer hardware and software) as they did on the organization, the style, or the surface features of writing. For both faculty and students, the questions most frequently asked were about the use of computer software. The next most frequently asked type of question involved the use of computer hardware.

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Insert Tables 1 and 2 about here

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At first glance, the frequency of questions asked about computer hardware and software worried us. We thought that such exchanges somehow represented interruptions of the writing process or that such concerns distracted writers from concentrating on topics more directly connected to the rhetorical task. After further observations of writers working in our labs, however, we realized such conclusions were not necessarily valid.

We noted, for instance, that the questions our users asked about software, were often closely tied to their concerns about grammar and mechanics, and the questions they asked about hardware, were often directed at solving problems of format and appearance in a written text. We learned, in other words, that although our faculty and students did ask questions about how to use software commands to format a page break or how to set the printer to get an adequate margin at the top of each page, the concerns that prompted their

Table 1

Topics of Questions Asked in Computer Lab, at Least Sometimes

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|                          | <u>Faculty</u> | <u>Students</u> |
|--------------------------|----------------|-----------------|
| Writing project at hand  | 64             | 67              |
| Computer hardware        | 73             | 60              |
| Computer software        | 91             | 66              |
| Non-Computer/Non Writing | 82             | 67              |

(All numbers represent percentages rounded to the nearest tenth.)

Table 2

Kinds of Questions Asked in the Computer Lab, at Least Sometimes

|                     | <u>Faculty</u> | <u>Students</u> |
|---------------------|----------------|-----------------|
| Hardware            | 45             | 53              |
| Software            | 75             | 64              |
| Organization        | 9              | 21              |
| Style               | 17             | 43              |
| Grammar & Mechanics | 27             | 50              |

(All numbers represent percentages rounded to the nearest tenth.)

queries were often rhetorical. At their heart, such questions involved non-computer issues that every writer must face--the effective use of white space and layout, readability, and the degree to which a text succeeds in communicating an author's ideas to an audience.

In this initial study, we were not satisfied with the way survey respondents identified the kinds of questions they asked about writing--those items labeled organization, style, and grammar on Table 2. We suspect that our survey itself may have limited responses in this category, and we plan a future study that focuses more specifically on exchanges dealing with the writing task itself.

The last finding we will discuss in this report involves the ways in which computers seemed to alter the faculty's and students' exchange of written copy.

When we first began to consider the effects of computers on writing, we assumed that the ease with which faculty and students could produce hard copy was a significant force in aiding collaboration. The attractiveness of neatly typed, clean copies of work in progress was apparent in the number of revisions faculty and students did in our labs. In place of one or even two revisions, some students and some teachers reported doing five or more revisions because it was so easy. Even though our machines are not available on a twenty-four-hour basis, they each produce more than 12,000 pages of hard copy every two months.

What we did not fully anticipate before we began our survey, however, was how profoundly computers had affected our exchange of another kind of written copy--that which was displayed on a computer screen. In this regard, a number of writers reported computers having a negative effect on the exchange of text.

One of our findings, for example, was that 80% of the teachers and 64% of the students we surveyed considered writing with the computer "more public" than traditional writing activities. This data, along with our observations of the visual eavesdropping that went on in our Lab, led us to suspect that the use of computers for writing actually facilitated the exchange of information even before material was translated into hard copy and voluntarily released by authors. We discovered, in fact, that the information written on computer screens was exchanged almost as readily as hard copy--even though, such exchanges were not always under the control of the author.

Because they did consider the computer screen a more public forum, many of the users who completed our survey indicated a reluctance to engage in certain writing tasks in the communal workspaces. Personal letters, "experimentations," papers that the composer was "really trying to think out," and even early drafts were the sorts of writing that faculty and students seemed unwilling to have seen. In some cases, respondents weighed the "immediate results" of composing on a computer screen against the lack of privacy, deciding that instant copies of letters and memos were worth the risks involved in public exposure, but this was the exception among those surveyed.

Along with recognition that writing on the computer was a more public activity than writing without the computer, 67% of the faculty surveyed and 53% of the students surveyed reported that there were times that they wanted to hide their documents from others, and, as Table 3 illustrates, 50% of the teachers and 53% of the students reported that they had developed techniques for hiding those things they did not wish to share. These techniques were equally distributed between those requiring the computer's help in masking text and those relying on human communication to accomplish the same end. Some writers, for example, reported electronic safeguards: they scrolled their text off the screen or sent their writing to files and packed up their books when their privacy was threatened by visual eavesdroppers. Other writers relied on more traditional social cues: they simply told people not to read what they were writing, or covered the screen with their hands and asked for privacy. Some of our less inhibited respondents told intruders to "get lost."

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Insert Table 3 about here.

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Because so many of our respondents commented on the "public" nature of writing on computers, we were not surprised to find them developing an etiquette specifically designed for communal writing spaces. This etiquette included rules about greeting other users, looking at someone else's screen copy, and locating oneself physically in relation to other writers composing on computers.

We can provide one representative example here. Only 14% of the

Table 3

Privacy

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|                                              | <u>Faculty</u> | <u>Students</u> |
|----------------------------------------------|----------------|-----------------|
| Feel like hiding work, at least<br>sometimes | 67             | 53              |
| Have techniques for hiding work              | 50             | 53              |

(All numbers represent percentages rounded to the nearest tenth.)

students and 20% of the teachers who responded to our survey, as you can see in Table 4, would upon entering the lab, go stand behind a computer user and read what was displayed on computer screen without being invited to do so by the author. In addition, only 67% of the students and 36% of the faculty responded that they would look at text on a screen even after they were invited.

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Insert Table 4 about here.

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This example and explanatory comments offered by our respondents led us to suspect two things: first that this reluctance on the part of many users to go about reading screen text on the screen is a reaction against the public nature of computer writing, and second that our users are in the process of developing a set of social "rules" that will serve to protect an author's right to keep screen copy private until it is in a form that he or she is willing to release.

Interestingly, this etiquette differed if an author was working on graphics rather than on written text alone. As Table 4 also indicates, larger percentages of both teachers and students reported they would, at least "sometimes," enter our lab and look at an author's graphics on a computer screen even without an invitation, and larger percentages also reported that they would look at graphic presentations on a screen after receiving an invitation from the author. Our survey indicated to us that users did not consider graphics as "personal" as text and, consequently, felt less

Table 4

## Etiquette in the Computer Lab

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|                                    | <u>Faculty</u> |                 | <u>Students</u> |                 |
|------------------------------------|----------------|-----------------|-----------------|-----------------|
|                                    | <u>Text</u>    | <u>Graphics</u> | <u>Text</u>     | <u>Graphics</u> |
| Avoid looking, at least sometimes  | 80             | 50              | 86              | 33              |
| Would look at sometimes if invited | 67             | 90              | 36              | 60              |

(All numbers represent percentages rounded to the nearest tenth.)

constrained about initiating sharing situations that involved graphics.

As you might guess from our discussion about computers and how they have affected our writing at Michigan Tech, we believe that electronic communication systems are responsible for radical shifts in the way humans exchange information and in the way they perceive this exchange. We also believe that such changes are at least as major as the shift from orality to literacy noted by Walter Ong and others.

Computers, whether netted together in an electronic system as large as IBM's VNET or un etted like the micros in our lab, are establishing new ways of "knowing" for human beings and are connecting hitherto unimagined clusters of people in exciting new language communities. We believe that when these technologies join groups of people together, they do so in a way that alters their relationship with information; that affects the interiority of the reading and writing processes; and that modifies, in ways we simply could not consider beforehand, the nature of human interaction and ways humans construct and contend with their world.

Our colleagues who see computers only as newfangled typewriters and not as more active agents in communication processes are simply failing to notice the extensive effect they have on human consciousness and social interaction. We suspect that they are in for a startling series of revelations.

The findings from our survey have convinced us that computers have created new language communities within our department and, what is more, that these machines have defined and shaped the communication that goes on within these communities. The result is collaboration of the best possible type, collaboration that lets students and faculty, in the words of Kenneth Bruffee (College English 1984, p. 650), "loosen the ties" to one, more traditional "knowledge community" and experience the challenges and excitement of a new one.

Our work, however, has only begun. If we, as a profession, hope to discover the effects that the electronic information revolution has on written communication and information exchange, we must complete more and larger studies dealing with the issues we have identified in this preliminary investigation.